If You Come to the USPTO to Work, Bring Your Own Desk

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A major transition is underway at the USPTO in how research is conducted by both examiners and professional searchers. Often called the most critical part of the entire patent procedure, the search for prior art is yielding to computerization, with the aim of displacing the entire paper record. Increased speed and production are the goals of PTO management, with the many qualities of the familiar, robust, and dependable paper based system being lost. This article will focus primarily on the Patent side; more on the Trademark side will appear in a future article.

By the time you read this, the PTO will have taken major steps toward what promises to be the biggest physical and operational changes in its 200+ year history. Computerization is leaving a wake in its path. Workstations have sprouted like mushrooms, with one on every examiner's desk and more than 100 available to the public. The PTO's version of automation, begun over 20 years ago, envisions a paperless process, including filing, examining and storing the application; digitally storing and retrieving all prior art (including US and foreign patents and non-patent literature), and, of course, communicating with applicants.

THE GLOWING SCREEN

For examiners and professional searchers alike, the computer has become the de facto method of conducting searches. Text and image windows appear side-by-side on a twenty-one inch CRT. The image window displays a nearly full size image of a patent, with fast page flip; the text window displays the text of the patent in a more legible font, with search terms highlighted. Two search engines with the acronyms EAST and WEST are available on each workstation. Using either engine, patents can be called-up individually by number, in groups using classification as in traditional paper searching, or by term (text) searching, using Boolean and adjacency operators.

The system is seductively powerful. Knowledgeable examiners and searchers alike attest to the appeal of computer searching: the speed in locating some results, even if not complete or the best; and the ease of sitting in one place to locate results, as opposed to hiking to locate paper files. Those searches that can be accurately defined often can be completed in a fraction of the time needed for a paper hand search. A computer search can cross boundaries of classification, sometimes finding references that would not be found otherwise. Often one can begin a search without a notion of where to look in the classification manual, and find what appear to be very decent references. Choosing the best two or three, conducting a forward and backward search of the cited references can provide even better art. But a closer analysis of the search results often yields some troubling findings.

FLAWS

The PTO system responds to two kinds of input: text, including truncation of selected terms, and classification. Either can be used alone, or in any combination. Though often described as "keyword" searching, the PTO database is not indexed. The searcher is his or her own lexicographer, and search success depends on whether the searcher's verbal imagination is a match for that of the writer of the patent. For example, a search for a baby blanket may miss that gem that calls it a "neonatal sheath." A search for "mad cow disease" may yield few results until "encephalopathy" or "bovine spongiform" are used. Using "cell or cellular" will confound both the biotech and the electrical searcher with thousands of irrelevant hits. The disparity between words-written and words-sought has been recognized by database experts for decades: in large databases such as NIH's Medline, journal articles and studies are indexed by experts, producing better yields and saving search and review time. Though proposed numerous times, this simple and effective tool has not been adopted by the PTO. (Circa 1870-1930 especially, examiners listed brief, handwritten notes on the face of patents in their collection that, in a few words, could add understanding to a complex patent, or paths to other useful references).

If vocabulary is troublesome, the system is absolutely stymied by chemical symbols and formulae, and the many variations of naming a compound. Mechanical devices and electrical circuits, always better represented with drawings than words, routinely elude a searcher armed with even an arsenal of words. A searcher armed with the terms, but without a solid understanding of the concept(s) of the invention, easily can be led astray, to the point of concluding that a patent with all of the right words has the right concepts as well. It has become all too common to encounter deficient search results in which not one of the cited references comes from a subclass which reads directly on the concept being searched. It becomes clear that the search was conducted entirely with text inputs, without benefit of classification.

"But an Examiner is too knowledgeable in his area to rely on potentially faulty references," you say. Examiners over the years have exhibited a quiet professionalism, devoting thoughtful attention to each application as a doctor would to a patient, despite experiencing similar pressure to meet quotas. In years past, consulting an examiner for help on a search typically led him or her to instantly point to appropriate subclasses, and often to a visit to the shoes to see the very patents brought to mind. More recently, searchers who regularly consult examiners have commented on what they sense as a loss of expertise on the part of examiners. Now, an examiner turns 90 degrees to his computer, sometimes appearing as perplexed as his visitor, and begins to perform what might be a duplicate of the text search his hopeful visitor has already tried. For their part, examiners bitterly complain of a dumbing down of the system, pointing to reduced search time, less attention to details, a push to "help our customers get patents" (the mission statement instituted during the Lehman era). There is an awareness that many applicants are not getting the prior art search they are paying for in the drive to meet quotas, and patents are being "pushed out the door."

Many experienced examiners complain of an apparent emphasis on recruiting new hires for whom English is a second language. The computer is seen as key to bringing new recruits quickly up to a high level of production, if not expertise. Nonetheless, management over the years has demonstrated a determination to find ways to further push the process using examiner production quotas, pitting one examining group against another.

Almost all users have assumed the computer system is 100% complete, and the user is not notified to the contrary. Using a simple search query, a check of the EAST/WEST system database from 1971 (long considered the lower "cutoff" date for searching text) to date, found over 103,000 patents without a text file, meaning those patents could not be retrieved using any terms contained anywhere in the patent.

Those patents missing text files will appear as hard-to-read image files if the query uses only classification or patent number, but not if the query includes even a single word of text. The defect, known for ten years to the database programmers, has yet to be fixed. Worse, there is no notification to users that the flaw exists. Management indicated they were unaware of the scope of the problem when contacted. (In fairness, patents prior to 1971 have been scanned into an OCR backfile, but are not even close to constituting a dependable database for searching, and the file is not available to the public).

COMPUTER ERGONOMICS

On serious projects, it has been common in the Public Search Room (PSR) over the years to have multiple searchers, attorneys and/or engineers working together. When a good reference is found, it would be shared, discussed, passed around, and compared with other patents. This method of working is not possible with the new workstations. Accommodations resemble coach class on a third-world airline, and the presence of a second person at a workstation is ergonomically impossible. Bulky twenty-one inch CRTs overpower the small space, with keyboards perched on the edge of the desk, a mouse to the side, and no space for even a notepad. On-screen patent images have one setting: black-on-bright-white background. The need to study the fuzzy, glowing images at close proximity, combined with high-intensity lights overhead, force many users to wear sunglasses. A tough search may end prematurely as the examiner/searcher reaches a point of visual exhaustion, and

several users report printing out large numbers of patents for more comfortable reading.

COMPUTER PERFORMANCE

So how has computer searching performed for the Office? Before the House Judiciary Committee chaired by Howard Coble in June of last year, Ronald Stern, President of the Patent Office Professional Association, testified: "more computers will not solve (production and quality) problems. There simply aren't any computers on this planet that can read about inventions, understand them, and make meaningful comparisons with prior inventions to determine novelty and obviousness…; the only way in which the throughput of the agency can be increased is by hiring more examiners."

Even as this testimony was being given, plans were underway to purge all paper patents, beginning with the Examiners' patent libraries, to make way for computer-only searching.

THE EXAMINERS' PAPER PURGE

PTO management's planned assault on the Examiners' classified patent libraries followed many months of negotiations with Examiners. First voting 85-15 to keep the paper patents, Examiners finally gave in to management and exchanged their libraries for a 15% pay raise and new monitors. By October, janitors began attacking chemical, biotech and design classes, then electrical classes, emptying the long-protected shoes into canvas bins, which were then unceremoniously wheeled outside to sit for sometimes days, awaiting pickup for the journey to pulping mills. Mixed in the piles were patents to Edison, Tesla, Westinghouse and others, lithographs that have been in active service for more than a century. (See "History's Blueprints, into Bureaucracy's Dustbin", New York Times, Dec. 30, 2001, p.1). After media coverage, the purge was briefly halted, only to resume out of public view.

In a concerted effort toward preserving at least one complete collection, members of the public appealed to management to fill in the missing subclasses of the Public collection with Examiners files.

ASSAULT ON THE PSR

Management responded to the public appeal for a combined collection by moving into the Public Search Room all of the Examiners' patents that were not already

part of the Public collection. No one who asked for the combined collection anticipated that additional space would not be provided. All of the added patents are being shoehorned into the public search room. To make space, management began moving, literally onto the street, half of the century old, custom-made benches used by the hundreds of daily users, including attorneys who come from all over the country. Citing lack of any additional space, or the money to pay for it, CIO Ronald Hack has indicated that all but one row of benches will be removed and then surplused, instead of being stored. Replacing the benches are thirty more identical computer workstations, each with no place to study paper files, or to open a briefcase. Tables the size of food trays set into odd spaces are to be provided for searching paper patents.

Even as this consolidation was in process, management published a plan in the August 27, 2001 Federal Register to trash the entire public collection of patents, (including the newly added examiner patents), and the Trademark Library, and requested public comment on the plan. Management says it wants out of the business of "warehousing paper." *After weighing the responses to the notice, PTO very recently announced in a second Federal Register notice a hearing set for May 16 for final public testimony (the notice is dated April 9, and viewable on the USPTO website).* The hearing is the last chance to protest the loss of what is widely viewed as (at the very least) the very best backup for a less than perfect computer system.

A feature of the recent notice is an invitation to a non-profit organization, such as a university, to take over the collection. If the PTO, with its applicant and patentee fee income exceeding a billion dollars a year cannot cover upkeep of the collection, how can a non-profit? Further, moving the collection would separate the investigative process from other vital processes: the same researchers who research the collection also consult the examining corps every day, and act as liaisons for applicants and their attorneys, especially for time critical material.

Loss of the Classified Patent and Trademark Libraries is considered by many to have serious ramifications. Removing the paper libraries would force complete dependence on the computer systems, with no dependable backup or alternate method for searching patents and trademarks. Chairman Coble and Ranking Member Berman of the House Judiciary Sub-

committee, in an April 9, 2001 letter to then Acting Director Godici, expressed serious concern about removal of any of the paper, with particular concern for the resulting effects on patent quality. A fear of most serious searchers and examiners is that, with the loss of paper, Classification will be neglected and then disappear. Already, some of the most active subclasses have grown to over 4000 patents, and according to Commissioner Godici's June 7 House testimony, further breakdown of large subclasses is "unnecessary, because we have keyword searching." An immediate threat is the loss of large numbers of images of both patents and trademarks that, due to poor scans, appear only as black blobs on screen; the only usable images that exist are on the very paper about to be trashed.

Keeping the Classified Patent and Trademark Libraries offers some unique advantages:

1. Paper files offer a cross-check for computer search results in both Patent and Trademark matters. Some computer search results are flawed to the extent that, especially in Trademark searches, the results cannot be relied on until duplicated in the paper files. In a significant number of cases, scanned images are not even legible in the computer file, and the paper file is the only usable source.

2. Location of the Libraries in the immediate vicinity of workstations and examining groups facilitate efficient location of needed material, and allow collaboration among users.

3. Visitors to the Patent Office need minimal training to use the paper based system, whereas the computer system requires substantial time to become even minimally proficient.

4. Finally, the Classified Libraries are by far the cheapest and most reliable system for searching patents and trademarks, and as such, are the best immediately available backup system for a computer system subject to hardware / software / network / storage media failure, and hacker / terrorist attacks. The computer downtime, which is now considered routine, is more expensive in computer systems personnel and lost user time than the Classified Library costs to maintain.

NON-PATENT RESOURCES

If there exists a library anywhere in the world that you would expect to house a complete and accessible collection of technical information, it would be at the USPTO. Title 35, Section 7 of the United States Code requires the USPTO to maintain a Scientific Library. Yet, public access to resources at the USPTO lacks the basics of even a good public library:

> Nonpatent technical literature is out of date or inaccessible (e.g. the collection of journals related to computer and optical technology is closed to the public). For in-depth projects, especially validity searches, public researchers must go to other libraries, such as the University of Maryland or Library of Congress, as the material is simply not available at the USPTO.

> The Public is unable to access the Internet or any alternate databases in the PTO (an outside offer of free ISP service has been refused by management), and even power connections and phone connections (for laptop use) are forbidden to the public.

According to examiners, Foreign Patents and Literature have not been updated in the paper records since 1995. There are now two online files, EPO for European and JPO for Japanese patents, that are intended to replace the paper files. The PTO Technical Library known as STIC, with three divisions: Central; Chemical/Biotech; and Electronic, are noticeably smaller in size, as they have cancelled many of the journals and other material that have been considered, until now, as essential prior art. Examiners who once were able to keep up to date in their fields by scanning technical journals and clipping useful articles, now have their literature searches conducted by contractors in premium online databases so as not to detract from examiner production time.

WHAT IS BEHIND THIS TREND?

Many, both inside and outside PTO, want to know what is driving what they view as unneeded and costly changes. Some critics point to former Commissioner Lehman's visit to Japan and the promises made for patent harmonization. The "e-government" initiative, and the drive to computerize starting in the early 80's, involved the very same defense contractors who cut their teeth on $700 hammers. But probably the most significant factor is management's drive to move the entire PTO into a new building.

THE MOVE

In search of a grander home for the PTO, management has been pushing, for more than eight years, construction of a new building complex in Old Town, Alexandria. This trendy, restored section of town already suffers from congested traffic, space is at a premium, and zoning restricts both initial size and growth of building complexes. Planned at a time when there were 2000 examiners and a proportional number of support staff, construction has begun and the new complex is already too small to house the current 3200 examiners, let alone another 950 anticipated recruits plus support personnel. Promises of better offices for examiners are beginning to fade, and proposals are being made for a large number of examiners to work at home part time, and on days when they come into the office, workstations will be assigned. As of this writing, the foundation for the first of five buildings has been poured, with steel ready to go up. The move is planned to occur in stages as each building is completed.

FEES

Each year since 1990, the PTO has received more than enough in applicant fees to pay all of its operating expenses, including a total of nearly two billion dollars for the computer system. But due to a 10 year pattern initiated by the elder President Bush, a significant portion of PTO income is annually diverted to other government programs, leaving a shortfall in the operating budget of the USPTO. And every year, PTO raises the multitude of fees charged applicants in order to make up the difference. The diversion of funds has been termed a "tax on innovation" by House Judiciary Chairman Coble and Minority Leader Berman, who have fought for years to stop the practice and to have the funds restored. The 2003 budget of $1.4 billion reflects a first effort to plug the leaks.

NIPRA

Early in 2000, in response to what they perceived as a serious decline in resources needed to serve the IP community, professional searchers formed the National Intellectual Property Researchers Association (NIPRA). The association set as its primary goals the preservation of the

patent library, and retention of full access to USPTO services. NIPRA's officers meet regularly with USPTO management and members of Congress in an effort to provide a better understanding of the needs of the Public, especially where they differ from the needs of the Agency and the positions expressed by the AIPLA.

SOME SUGGESTIONS

Despite the foregoing criticism, computerization is considered needed, useful, and desirable. But the technology, including software and display technology, is far from optimal as implemented at the PTO, and is not ready to replace the paper-based system:

1) The database must be completed to allow full text searching and retrieval of all patents, and a simple test should be available to any user to check integrity of the database.

2) Search engines need improvement. The text window should provide means for noting the location of key terms or concepts that correspond to the column and line numbering of paper patents. Windows should allow display of multiple pages of a patent or patents for comparison.

3) A software clipboard should be implemented that is attachable to any patent, allowing an examiner to provide notes according to a defined standard, thus permitting patents to be located using terms other than those chosen by the applicant.

4) Workstation design must take advantage of ergonomic techniques known for twenty years, including less stressful lighting, displays more suited to the task of searching, the need for wrist supports, and many others.

5) CRT displays should be replaced with high resolution LCD or equivalent displays, optimized for display of text and drawings.

6) Until the computer system has matured to a high level of dependability and usability, in the judgment of an objective panel, retain the paper patent and trademark libraries in full working order.

7) Recognize the very significant value of the U.S. Classification system, and maintain it accordingly.

8) The PTO must learn from successful companies and establish a forum for incorporating the expertise of the user community (including examiners and public alike) in all phases of the planning and implementation process. Morale, production and quality can only improve. **IPT**

Sopheon Launches Service Package to Help Companies Maximize Return on Intellectual Property

New Service Provides Up-to-Date Intelligence, Expert Analysis

MINNEAPOLIS and LONDON—Sopheon, the international software and services company, today introduced a subscription-based service to help companies cost-effectively develop, manage and commercialize intellectual property (IP). The new offering features highly skilled patent analysts and a proprietary network of scientific, technical and industry experts who can provide users with targeted intelligence and analysis needed to maximize the return on IP investments.

Gartner Group, an industry research and advisory firm, estimates that IP-rich enterprises choosing to develop and pursue intellectual-property management strategies will increase IP-related revenue by 50 percent through 2004.* The newly launched Sopheon service assists such companies by evaluating the commercial viability of existing intellectual property, supplying information to support the formulation of patent strategies, and helping to define approaches for the commercialization of IP.

The centerpiece of Sopheon's new offering is a team of top patent analysts with broad source knowledge and extensive, industry-specific experience in providing support for IP decision-making. Germany-based Aventis CropScience attests to the strength of Sopheon's intellectual property research capabilities. "We count on the expertise of Sopheon's patent analysts to ensure that our intellectual property assets build corporate value," said Herbert Stark, Head of Chemical Stimulants / R&D, Aventis CropScience. "Sopheon has earned our confidence by consistently providing timely intelligence and thorough analysis."

Sopheon's IP competency centers are located in Minneapolis and Frankfurt, Germany. Analysts are equipped with state-of-the art search tools, a range of proven search methods and techniques, and access to electronic and human patent-intelligence sources throughout the world. These sources include a proprietary network comprised of experts in more than 30,000 areas of science and technology. Acting as members of the analyst team, the experts contribute in-depth knowledge that results in more insightful analysis of patent-related technical questions and issues. Service subscribers contact the analysts by telephone or e-mail, or through a Sopheon-supplied desktop portal that also allows users to perform certain kinds of patent research on their own.

Sopheon's new service is designed to supply critical information and analysis at each step of the IP management process, including input for screening decisions, such as:

— Should a newly developed technology be patented or treated as a trade secret?

— Should a potential patent be filed, published or disregarded?

— Should an existing patent be maintained, abandoned or sold?

— Should needed intellectual property be developed internally or acquired?

— Should a current patent be reissued or reexamined?

The service package is based on Sopheon's more than 16 years of experience in providing IP decision-making support to R&D-intensive industry leaders such as GlaxoSmithKline, General Electric, Dow Chemical and Aventis.

"It has been estimated that U.S. companies alone are wasting more than $1 trillion in underutilized patent assets," said Jack Johnson, president of Sopheon's Information Management Solutions business unit. "Our new intellectual-property service is designed to help technology-driven companies identify, protect and leverage the IP that is worth holding onto, and make the right decisions in getting rid of those portfolio assets that have lost their value. It's a capability that's designed to deliver important bottom-line benefits."

* Gartner Report, "Intellectual Property Asset Management Systems," D. Logan, October 2001.